

**REMARKS****I. Amendments**

Applicants respectfully submit that the amendments to the pending claims are appropriate under 37 CFR 1.116(b), as they comply with the requirements of form expressly set forth in the June 23, 2010 Office Action and/or present the rejected claims in better form for consideration on appeal. Accordingly, Applicants request that the amendments be entered by the Examiner.

Specifically, claims 128, 129, and 132 have been amended to clarify that the claimed invention is directed to “purified” cage molecules consisting of carbon atoms. This amendment is responsive to the rejections of these claims under 35 U.S.C. §§101 and 102. Support for this amendment can be found throughout the application, and specifically at page 11, lines 4-21.

Claims 133, 150 and 153 have been amended to specify which cage molecules are referenced. Claim 133 is further amended to correct the inadvertent exclusion of the term “molecules.” Claim 153 has been amended to depend from claim 150. Claim 151 has been amended to remove limitations which allegedly lack antecedent basis. These amendments are responsive to the rejection of these claims under 35 U.S.C. §112, second paragraph or to the Examiner’s objection as to form.

Claim 152 has been canceled to expedite allowance.

New claims 164-166 have been added. Claim 164 is dependent on claim 127 and adds the Examiner’s proposed amendment that the cage be soluble in non-polar organic solvents. Because the Examiner himself suggested this limitation in the previous Examiner’s Amendment and in the final Office Action (see top of page 12 for example), Applicants respectfully submit that this new claim is either allowable or in better form for appeal and should be entered at this time.

Likewise, claim 165 is dependent on claim 127 and adds the limitation that the cage moiety is a polyhedral carbon cage. Because the Examiner has raised the assertion that the currently pending claims inappropriately read on nanotubes (see top of page 12 for example), and claim 165 includes an additional structural limitation that excludes nanotubes, Applicants respectfully submit that this new claim is either allowable or in better form for appeal and should be entered at this time. Support for the claim may be found at page 1, lines 19-21; page 2, lines

8-11; page 2, lines 17-33; and page 11, lines 4-14.

Likewise, claim 166 is dependent on claim 127 and further defines the cage moiety as C<sub>60</sub>. The Examiner has acknowledged in the final Office Action that the specification discloses examples of cage moieties based on C<sub>60</sub> (see top of page 15 for example). Accordingly, Applicants respectfully submit that this new claim is either allowable or in better form for appeal and should be entered at this time.

## II. Support for Previous Amendments

The Examiner has asserted that Applicants failed to provide support for claims 122-163 when they were originally filed on March 12, 2009. (June 23, 2010 Office Action at p. 15). Support for the pending claims can be found throughout the specification, but, for completeness, Applicants have included the following table addressing where specific support can be found for each claim.

Claim	Support
122	Page 8, lines 24-25; Page 11, lines 4-21.
123	Page 8, lines 24-25; Page 11, lines 4-21.
124	Page 11, lines 4-21.
125	Page 8, lines 24-25; Page 11, lines 4-21.
126	Example 1, Page 16; Example 2, Page 17; Page 11, lines 4-21.
127	Page 15, lines 26-34.
128	Page 15, lines 12-26.
129	Page 4, line 30 to Page 5, line 6; Page 15, lines 12-26.
130	Example 1, Page 16.
131	Example 1, Page 16.
132	Example 1, Page 16.
133	Page 3, line 27 to Page 6, line 22; Examples 1-3; Original claim 1.
134	Page 3, lines 30-32.
135	Page 3, lines 30-32.
136	Page 3, lines 27-30; Page 4, lines 1-4.
137	Page 4, lines 1-4.
138	Page 4, lines 1-4.
139	Example 1.
140	Page 4, lines 12-16.
141	Page 4, lines 21-24.
142	Page 4, lines 24-26.
143	Page 4, line 29 to Page 5, line 7.
144	Page 5, lines 8-14.
145	Page 4, lines 13-14.
146	Page 6, lines 3-5.

147	Page 6, lines 3-6.
148	Page 6, lines 3-6.
149	Page 6, lines 16-19.
150	Example 1.
151	Page 5, lines 8-14.
152	Page 7, lines 15-18.
153	Page 7, lines 15-18; Example 1.
154	Page 3, lines 30-32; Example 1.
155	Page 3, lines 30-32; Example 1.
156	Page 3, lines 27-31; Page 4, lines 1-4; Page 4, lines 8-10; Example 1.
157	Page 4, lines 1-4.
158	Page 4, lines 1-11.
159	Example 1.
160	Page 4, lines 12-16; Example 1.
161	Page 4, lines 21-24; Example 1.
162	Page 4, lines 21-24.
163	Page 4, lines 13-14.

### III. Advisory Action Dated September 16, 2010

In the Advisory Action dated September 16, 2010, the Examiner has again refused entry of Applicants' Supplemental Amendment filed September 25, 2009. In an attachment to the Advisory Action, the Examiner responded that the newly presented claims "do not simplify the issues for appeal and were not suggested by the Office." The Examiner also asserts that the final Office Action should remain final because "none of the pending claims that have been entered and examined overlap in scope with the previous set of claims addressed in the September 12, 2008 non-final Office Action." Applicants strenuously disagree with both points and again request that the Supplemental Amendment filed September 25, 2009 be entered, or that the finality of the Office Action dated June 23, 2010 be withdrawn.

First, the Examiner has provided no reasoning to support his determination that the proposed claims do not simplify the issues for appeal, whereas Applicants have provided clear reasoning as to why they do. Most significantly, the newly presented claims incorporate a structural limitation (*e.g.*, "polyhedral" or "icosahedral") that excludes nanotubes, which has been the Examiner's main basis for rejecting the currently pending claims under 35 U.S.C. §112, first paragraph. Accordingly, Applicants fail to see how claims incorporating a structural limitation that directly resolves a rejection or basis for rejection do not present the subject matter in a better form for appeal.

Second, Applicants respectfully submit that the newly presented claims did in fact incorporate suggestions by the Office in that they incorporated suggestions made by Examiner Hendrickson and used language deemed equivalent to Examiner Yuan's proposed language by Examiner Chaney. As Applicants understand, Examiners Hendrickson and Chaney are also representative of the Office in the same manner as Examiner Yuan.

Finally, it is certainly not true that "none of the pending claims that have been entered and examined overlap in scope with the previous set of claims addressed in the September 12, 2008 non-final Office Action," as asserted in the Advisory Action. In fact, the pending claims are actually more narrow in scope as compared to those pending previously. Accordingly, if Examiner Yuan believes that the current claims are rejectable under 35 U.S.C. §112, first paragraph as not sufficiently described for the entire genus, then certainly this rejection should have been made in the non-final Office Action since the claims pending at that time were broader in scope than those currently pending now.

For example, current claim 126 is directed to "A macroscopic amount of purified cage molecules consisting of carbon atoms." Claim 107 (now canceled but pending at the time of the non-final Office Action), was directed to "Macroscopic amounts of a fullerene." Thus, current claim 126 is more narrow than previously pending claim 107 in that the claimed cage molecules are now defined as consisting only of carbon atoms. Moreover, by the Examiner's own assertion in the final Office Action, he believes that the term "fullerene" encompasses carbon nanotubes. (June 23, 2010 Office Action at p. 6). Accordingly, current claim 126 is entirely contained within the scope of previously pending claim 107, yet no §112 first paragraph rejection was made in the non-final Office Action. Is the Examiner asserting in the Advisory Action that claim 107 pending at the time of the non-final Office Action is free of the same §112 first paragraph issues even though it entirely encompasses the subject matter of the current claim 126? If not, then the newly raised §112 first paragraph rejection most certainly should have been first raised in the non-final Office Action.

Similarly, current claim 124 is directed to "Crystalline cage molecules consisting of carbon atoms." Claim 121 (now canceled but pending at the time of the non-final Office Action), was directed to "Substantially pure fullerene in crystalline form." Thus, current claim

124 is more narrow than previously pending claim 121 in that the claimed cage molecules are now defined as consisting only of carbon atoms. Indeed, current claim 124 is entirely contained within the scope of previously pending claim 121, yet no §112 first paragraph rejection was made in the non-final Office Action. In fact, claim 121 was deemed allowable! Is the Examiner asserting in the Advisory Action that claim 121 pending at the time of the non-final Office Action is free of the same §112 first paragraph issues even though it entirely encompasses the subject matter of the current claim 124? If not, then the newly raised §112 first paragraph rejection most certainly should have been first raised in the non-final Office Action.

As yet another example, current claim 123 is directed to “Purified cage molecules consisting of carbon atoms in solid form.” Claim 120 (now canceled but pending at the time of the non-final Office Action), was directed to “Substantially pure fullerenes in solid form.” Thus, current claim 123 is more narrow than previously pending claim 120 in that the claimed cage molecules are now defined as consisting only of carbon atoms. As with the above examples, current claim 123 is entirely contained within the scope of previously pending claim 120, yet no §112 first paragraph rejection was made in the non-final Office Action. In fact, claim 120 was deemed allowable! Is the Examiner asserting in the Advisory Action that claim 120 pending at the time of the non-final Office Action is also free of the same asserted §112 first paragraph issues even though it entirely encompasses the subject matter of the current claim 123? If not, again, the newly raised §112 first paragraph rejection most certainly should have been first raised in the non-final Office Action.

Applicants provide a table below providing a side-by-side comparison, exemplifying how the currently pending claims were in fact narrowed as compared to the claims pending at the time of the non-final Office Action and are fully contained within the scope of those previously claims. Accordingly, Applicants fail to see how the Examiner can assert that “none of the pending claims that have been entered and examined overlap in scope with the previous set of claims addressed in the September 12, 2008 non-final Office Action.” This is a clear error which again demonstrates that Applicants are not being provided the requisite due process to respond to a newly raised §112, first paragraph rejection that should have been raised in the non-final Office Action.

<b>Claim pending at time of non-final Office Action</b>	<b>§112 first paragraph rejection raised?</b>	<b>Currently pending claim</b>	<b>§112 first paragraph rejection raised?</b>
120. Substantially pure fullerenes in solid form.	NO; claim deemed <u>allowed</u>	123. Purified cage molecules consisting of carbon atoms in solid form.	Yes; made final
121. Substantially pure fullerene in crystalline form.	NO; claim deemed <u>allowed</u>	124. Crystalline cage molecules consisting of carbon atoms.	Yes; made final
107. Macroscopic amounts of a fullerene.	NO; only rejected under §§101 and 102/103 as reading on naturally occurring coal deposits	126. A macroscopic amount of purified cage molecules consisting of carbon atoms.	Yes; made final

As the Examiner is probably aware, Applicants have now received word from the Technology Center Director that she intends to deny Applicants' petition to ensure entry of our Supplemental Amendment or withdrawal of finality of the Office Action dated June 23, 2010. Applicants believe this decision is also a clear error on the part of the Office and as such, Applicants intend to continue to pursue all avenues of review to obtain the justice deserved. Applicants again encourage the Examiner to telephone the undersigned if he believes further discussion would help to expedite an allowance in this case.

#### **IV. Objection under 37 CFR 1.75(c)**

The Examiner has objected to claim 153 as being of improper dependent form in view of claim 152. Applicants have amended the dependency of claim 153. As claim 153 now properly depends from claim 150, Applicants respectfully request that the objection be withdrawn.

#### **V. Rejection under 35 U.S.C. § 112, First Paragraph**

The Examiner has rejected claims 122-127, 130-131, and 133-163 under 35 U.S.C. § 112, first paragraph for "failing to comply with the written description requirement." (June 23, 2010

Office Action at p. 10). The Examiner argues that there is no support in the original disclosure for the genus drawn to “cage molecules consisting of carbon atoms” or “cage molecules.” (June 23, 2010 Office Action at p. 10). The Examiner’s rationale is that this language would supposedly encompass carbon nanotubes “for which there is no written description support in the original disclosure.” (*Id.*). The Examiner’s apparent solution is to modify the claim language to read “cage molecules consisting of carbon atoms that are soluble in non-polar organic solvents.” (*Id.* at 11). Applicants respectfully disagree with the Examiner, because the §112, first paragraph rejection newly raised is substantively and legally erroneous.

As noted in our filed petition, **Federal case law makes it clear that it is impermissible to use a later factual reference to determine whether the application is enabled or described as required under 35 U.S.C. 112, first paragraph.** MPEP 2124 (citing *In re Koller*, 613 F.2d 819, 823 n. 5, 204 USPQ 702, 706 n.5 (CCPA 1980)). The present application has a priority date of September 10, 1990. According to published accounts cited by the Examiner, carbon nanotubes were first described in November 1991, well over a year after Applicants’ invention. (*See*, Ijima, 354 NATURE 56-58 (1991)). Therefore, it is both impermissible and erroneous for the Examiner to read Applicants’ specification in light of this post-published art for purposes §112 first paragraph, no matter how tempting that might be given the age of this application.

The Federal Circuit aptly illustrated the error underlying the recently applied §112 first paragraph rejection in *U.S. Steele Corp. v. Phillips Petroleum Co.*, where they stated:

[D]efendants fail to recognize that “application sufficiency under Sec. 112, first paragraph, must be judged as of the filing date.” *In re Glass*, 492 F.2d 1228, 1232, 181 USPQ 31, 34 (CCPA 1974); *see In re Hogan*, 559 F.2d at 604, 194 USPQ at 535 (Sec. 112's enablement requirement); *In re Koller*, 613 F.2d 819, 823, 204 USPQ 702, 706 (CCPA 1977) (Sec. 122's written description requirement).

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*In re Koller* is particularly illustrative. The claims there at issue and claims contained in a grandparent application contained the broad term “liquid medium.” The PTO board held that appellants could not rely on the grandparent's filing date because “[t]he broad recitation 'liquid medium' would have been construed by one skilled in the art from the disclosure as consisting of water or water to which a miscible organic solvent is added.” [citation omitted.] Because of a later discovery that water-immiscible solvents could

be used, the board emphasized that "[t]he term [liquid medium] as now interpreted by appellants is broader than that disclosed in the grandparent application."

...

Our predecessor court reversed, citing the general rule that "language in a specification is to be understood for what it meant to one having ordinary skill in the art at the time the application was filed," [citation omitted], and noting that support need be found for only the claimed invention, in view of how one skilled in the art at that time would construe the claims and would read its specification.

...

That the '851 claim may cover a later version of the claimed composition . . . relates to infringement, not to patentability. See *In re Hogan*, 559 F.2d at 607, 194 USPQ at 538. To hold differently would, in the words of *Hogan*, "impose an impossible burden on inventors and thus on the patent system." 559 F.2d at 606, 194 USPQ at 537.<sup>1</sup>

Applicants see unmistakable parallels between the rejection newly raised by the Examiner and the rejection applied in *In re Koller*. As noted in the final Office Action, "Examiner Yuan told Mr. Barron on September 24, 2009 that proposed claim 164 was not supported by the original disclosure because the present day meaning of fullerene encompasses carbon nanotubes which applicants did not invent." (June 23, 2010 Office Action, p. 6 (emphasis added)). Similarly, as the Examiner states on pages 13-14 of the final Action (emphasis added):

The species C<sub>60</sub> and C<sub>70</sub> and their corresponding higher order family members such as C<sub>240</sub> are representative of the genus encompassed by the term fullerene as understood at the time of the effective filing date of the present application by one of ordinary skill in the art. Today, the definition of fullerene has evolved to encompass carbon nanotubes [citation omitted]. Applicants clearly did not conceive of carbon nanotubes (that is, did not have possession of carbon nanotubes) or regard carbon nanotubes as their invention as of the effective filing date or actual filing date of the present application.

Thus, as in *In re Koller*, the Examiner has evaluated written description in light of a later

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<sup>1</sup> US steele citation



discovery, not according to the state of the art at the time of filing. In fact, the Examiner explicitly acknowledges in the above paragraph that the disclosed species are indeed representative of the claimed genus as viewed as of the effective filing date, the date on which the inquiry is to be based! Indeed, carbon nanotubes have been described as a “by-product” of the discovery of C<sub>60</sub> fullerenes, which is a testament to the pioneering nature of Applicants’ invention. (*See*, Andreoni, *The Physics of Fullerene-Based and Fullerene-Related Materials*, Vol. 23 (2000) (previously submitted with the July 16, 2010 Request for Reconsideration and August 23, 2010 Petition)). As the Federal Circuit recognized in *In re Koller*:

As pioneers, if such they be, they would deserve broad claims to the broad concept. What were once referred to as “basic inventions” have led to “basic patents,” which amounted to real incentives, not only to invention and its disclosure, but to its prompt, early disclosure. If later states of the art could be employed as a basis for rejection under 35 U.S.C. § 112, the opportunity for obtaining a basic patent upon early disclosure of pioneer inventions would be abolished. [citing *In re Hogan*, 559 F.2d at 606, 194 USPQ at 537.]

In *Hogan*, an analysis using later-filed references to determine the scope of enablement was found to be impermissible. Similarly, it cannot be allowed when, as here, the description requirement is an issue. Therefore, as the Examiner has made a clear error in rejecting the claims under §112 first paragraph, for the language “cage molecules consisting of carbon atoms” in view of the discovery of carbon nanotubes, Applicants respectfully request that the rejection be withdrawn.

Even if the Examiner refuses to follow federal case law precedence, Applicants note that previous statements by Examiners assigned to this case support the validity of Applicants’ pending claims. Applicants can point to specific quotes by the Office that clearly indicate that the language used in the previous and current claims is equivalent to the language the current Examiner believes would exclude carbon nanotubes and make the claims allowable. For example, in objecting to previous claims, Examiner Chaney specifically stated:

Applicant uses several terms in the claims that **appear to be equivalents at the time of filing** of the instant application. At the time of filing, the term “fullerene” was understood to mean the family of hollow caged carbon molecules with an even number of carbon atoms represented by C<sub>60</sub>, C<sub>70</sub>, etc. as stated by Harold

Kroto in his declaration filed on 16 November 1999 in the instant application. At the time of filing, the terms “**a cage carbon allotrope consisting solely of carbon atoms soluble in non-polar organic solvents**,” “a cage carbon allotrope consisting solely of carbon atoms soluble in non-polar organic solvents, which allotrope of carbon is neither graphite or diamond,” “allotrope of carbon is neither graphite nor diamond,” and “**a cage carbon allotrope consisting solely of carbon atoms**” can only refer to the carbon allotrope represented by the fullerene family.

(September 12, 2008 Office Action at p. 4) (emphasis added).

Based on Examiner Chaney’s own September 12, 2008 statement, the language used in the current claims is equivalent to the language the current Examiner has proposed. Examiner Chaney specifically noted that “[a]t the time of filing, the terms ‘a cage carbon allotrope consisting solely of carbon atoms soluble in non-polar organic solvents,’ . . . and ‘a cage carbon allotrope consisting solely of carbon atoms’ can only refer to the carbon allotrope represented by the fullerene family.” (*Id.*). As such, Applicants believe that the pending claims meet the written description requirement and are allowable in view of the September 23, 2008 interview. Although the claims do not use the exact language discussed in the interview, they incorporate the proposed amendments using equivalent language as acknowledged by the Office, and thus, Applicants request that the rejection be withdrawn.

The Examiner also argues that claims 133-149 and 150-163 lack written description under 35 U.S.C. § 112, first paragraph as “[t]he genus ‘cage molecules’ encompasses cage molecules consisting of elements that are not carbon” and again makes reference to the claims reading on carbon nanotubes and other cage molecules not consisting solely of carbon. (June 23, 2010 Office Action at pp. 12-13). Once again, the Examiner appears to be judging written description of the invention based on post-published information, since the Examiner clearly states that the disclosed species are “representative of the genus encompassed by the term fullerene as understood at the time of the effective filing date by one of ordinary skill in the art.” (June 23, 2010 Office Action at p. 13).

Similarly, the Examiner rejects claim 127 for lack of written description as “[i]t is unclear what applicants intend to claim by the genus drawn to a cage moiety consisting of carbon atoms” and “the limited number of prophetic examples disclosed in the specification do not support the genus . . . which includes derivatives of carbon nanotubes.” (*Id.* at 15). Applicants respectfully

disagree with the Examiner's assessment.

As noted in Section IV, above, the Examiner has improperly evaluated 112 in light of a later discovery. Claim language must be interpreted in view of its meaning at the date of filing. The Examiner has already acknowledged that Applicants have described sufficient species at the time of filing to support the fullerene genus. Accordingly, it is incorrect for the Examiner to argue that the application fails the written description test in view of carbon nanotubes, which were not invented until over a year after Applicants' priority date.

Regarding derivatized cage moieties, the specification provides a number of examples that show how the claimed invention can be chemically modified. The specification shows the carbon cages can be modified on the exterior, such as  $C_{60}F_{60}$  and  $C_{60}H_{60}$ , and points out that atoms and molecules can be chemically bound to the interior of the molecule as well. (*See, e.g.*, the '890 specification at page 15, lines 32-34). Applicants remind the Examiner that the written description standard under 112, first paragraph is based on whether "the description clearly allows persons of ordinary skill in the art to recognize that he or she invented what is claimed." (MPEP 2163.02). Given the Examiner's acknowledgement of the sufficiency of the disclosed species and the disclosure discussed above, clearly this is the case.

The Examiner takes issue with the term "moiety" in claim 127, as it is "neither defined in the specification nor in the claims." (June 23, 2010 Office Action at p. 14). The Examiner cites the definition "[a] part or portion of a molecule, generally complex, having a characteristic chemical or pharmacological property." (McGraw-Hill, Dictionary of Scientific and Technical Terms, (4<sup>th</sup> Ed. 1989)). Applicants believe that the application provides sufficient written description to properly interpret the term "moiety" as used in claim 127.

Applicants note that "claim language must be given its plain meaning unless such meaning is inconsistent with the specification." (*See* MPEP 2111.01). The dictionary definition cited by the Examiner clearly indicates that a "moiety" is a part or portion of a molecule. Here, the specification shows the carbon cages can be modified both externally and internally. (*See, e.g.*, the '890 specification at page 15, lines 32-34). The examples and language in the specification support the Examiner's definition, as the claimed invention would a) constitute a portion of a molecule ( $C_{60}/C_{70}/C_{240}/etc.$ ), b) generally, be complex (these are highly ordered, complex molecules), and c) have characteristic chemical properties (e.g., chemical/thermal stability). Hence, Applicants feel that the term "moiety" is fully supported by the disclosure in

the specification and presents no issue with regard to written description.

In summary, Applicants believe that the Examiner has erroneously relied on post-filing art to reject the presently claimed invention. Further, Applicants' claim language was previously accepted by the Office and deemed to be equivalent to the proposed Examiner's Amendment. Finally, Applicants believe that the specification provides sufficient written description to show that the Applicants were indeed in possession of the claimed invention. Accordingly, Applicants respectfully request that the Examiner withdraw his 112, first paragraph rejection of claims 122-127, 130-131, and 133-163. Without agreeing with the rejection and solely in the interests of expediting an allowance of this application, Applicants have added new claims 164-166, which are limited respectively by the reference to solubility in non-polar organic solvents, by reference to the polyhedral structure of the cage molecules, and by reference to the specifically disclosed species of C<sub>60</sub>. Based on the Examiner's rationale for the §112 first paragraph rejection, it would appear that these claims should be free of the rejection.

#### **VI. Rejection under 35 U.S.C. § 112, Second Paragraph**

The Examiner has rejected claims 127, 133-163 under 35 U.S.C. § 112, second paragraph for "failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention." (June 23, 2010 Office Action at Page 16.). While Applicants do not necessarily agree with the substance of the Examiner's argument, Applicants have amended claims 133, 150 and 151 to clarify antecedent basis. As such, Applicants believe that the Examiner's 112, second paragraph rejections of claims 133-163 have been rendered moot, and respectfully request that the rejection be withdrawn.

The Examiner rejects claim 127 for lack of indefiniteness as "[i]t is unclear what is meant by the term 'moiety'. . . [and what] applicants intend to claim by the genus drawn to a cage moiety consisting of carbon atoms." (June 23, 2010 Office Action at p. 17). The Examiner also notes that "the limited number of prophetic examples disclosed in the specification do not support the genus . . . which includes derivatives of carbon nanotubes . . . Therefore the metes and bounds of claim 127 are unclear." (*Id.* at 18). Applicants respectfully disagree with the Examiner's assessment.

As noted in Section IV, above, the Examiner has improperly evaluated 112 in light of a later discovery. Claim language must be interpreted in view of its meaning at the date of filing.

The Examiner has already acknowledged that Applicants have described sufficient species at the time of filing to support the fullerene genus. Accordingly, it is incorrect for the Examiner to argue that the application is indefinite in view of carbon nanotubes, which were not invented until over a year after Applicants' priority date.

Regarding the Examiner's argument that the "metes and bounds" of the claimed invention are unclear, Applicants point out that "[d]efiniteness of claim language must be analyzed, not in a vacuum, but in light of : (A) [t]he content of the particular disclosure; (B) [t]he teachings of the prior art; and (C) [t]he claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made." (MPEP 2173.02). Here, the specification provides a number of examples that show how the claimed invention can be chemically modified. For example, the specification shows the carbon cages can be modified on the exterior, such as with  $C_{60}F_{60}$  and  $C_{60}H_{60}$ , and points out that atoms and molecules can be chemically bound to the interior of the molecule as well. (*See*, the '890 specification at page 15, lines 32-34). Therefore, a skilled artisan, looking at claim 127 in the context of the present disclosure, would clearly recognize the metes and bounds of the claim.

The Examiner argues the term "moiety" is indefinite. Again, Applicants note that "claim language must be given its plain meaning unless such meaning is inconsistent with the specification." (*See* MPEP 2111.01). The dictionary definition cited by the Examiner clearly indicates that a "moiety" is a part or portion of a molecule. Here, the specification shows the carbon cages can be modified on the exterior, such as  $C_{60}F_{60}$  and  $C_{60}H_{60}$ , and points out that atoms and molecules can be chemically bound to the interior of the molecule as well. (*See, e.g.*, the '890 specification at page 15, lines 32-34). The examples and language in the specification support the Examiner's definition, as the claimed invention would a) constitute a portion of a molecule ( $C_{60}/C_{70}/C_{240}/etc.$ ), b) generally, be complex (these are highly ordered, complex molecules), and c) have characteristic chemical properties (e.g., chemical/thermal stability). Hence, Applicants feel that the term "moiety" is not indefinite, but rather is fully supported by the disclosure in the specification as the specification is consistent with the plain meaning of the term. Therefore, as the outstanding rejections under 112, second paragraph have been overcome, Applicants respectfully request that the Examiner withdraw them.

## VII. Rejection under 35 U.S.C. § 101

The Examiner has rejected claims 128, 129 and 132 under 35 U.S.C. § 101 in view of Fang and Osawa, which describe naturally occurring fullerenes in coal deposits. While making no statement regarding the substance of the Examiner's argument, Applicants have amended the relevant claims so that they are now directed to "purified cage molecules." Consequently, as the claimed invention does not occur naturally in a purified form Applicants respectfully request withdrawal of the rejection.

#### **VIII. Rejection of Claim 127 under 35 U.S.C. § 102(b)**

The Examiner has rejected claim 127 under 35 U.S.C. § 102(b) as anticipated by Chiang. The Examiner argues that claim 127 is not entitled to the earlier filing date, as the original disclosure does not support the claim. Applicants respectfully disagree.

Applicants note that the 102(b) rejection of claim 127 is a result of the Examiner's belief that claim lacks written support in the original disclosure under 35 U.S.C. S 112, first paragraph. However, it is clear according to the case law above that written description must be evaluated at the time of filing and the Examiner has already acknowledged the sufficiency of the disclosed examples to support the genus at the time of filing. As such, Chiang does not constitute prior art, as its effective filing date is later than the present application. Therefore, Applicants respectfully request that the rejection of claim 127 under 102(b) be withdrawn.

#### **IX. Rejection under 35 U.S.C. § 102(b)/103(a)**

The Examiner has rejected claims 128, 129 and 132 under 35 U.S.C. § 102(b) or § 103(a) over Kappler in view of Kratschmer and Smalley or, alternatively, Lefevre as evidenced by Liu and Rietmeijer. The Examiner argues that compounds of the claimed invention would have been inherently produced by Kappler and Lefevre, as evidenced by later references, even though neither reference explicitly describes compounds of the claimed invention. While making no statement regarding the substance of the Examiner's argument, Applicants have amended the relevant claims so that they are now directed to "purified cage molecules." Consequently, as the references fail to disclose a purified cage molecule, Applicants believe that the cited references fail to inherently or explicitly disclose the claimed invention as recited in the amended claims, and therefore, respectfully request withdrawal of the rejection.

**Except** for issue fees payable under 37 C.F.R. 1.18, the Commissioner is hereby

authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or to credit any overpayment to Deposit Account 50-1283. This paragraph is intended to be a **Constructive Petition for Extension of Time** in accordance with 37 C.F.R. 1.136(a)(3).

Dated: September 23, 2010

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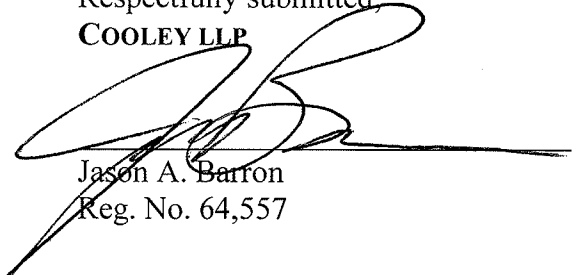
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